Cultivating Learning Across the Curriculum

Oaks Montessori School ~ 2014 - 2015 Garden of Learning Project

The Idea

- To create an on-going, functional school-wide garden to encompass fall, winter and spring planting
- To create meaningful connections from our work in the garden to lessons in math, science, language, geometry, engineering, art, history and geography for elementary age students
- To share our progress and lessons learned

Getting Started

- Grant awarded by the Louisiana Environmental Education Commission to purchase initial educational materials
- Technical support from the Biology Department at the University of Louisiana at Monroe
- Seed donations from Ponchatoula Feed & Seed and Hammond True Value
- Tremendous on-going family support

Learning from the Soil

- We started with an in-depth study of geology (how the earth was made, rock formation, etc.) and branched out into numerous extension lessons.
- We brought in various research materials on soil composition, tree and plant growth, and organically attending to basic plant needs and potential illnesses
- We let the children pose the questions and then showed them how to get answers and test their hypotheses.

Cultivating Connections in Math

- Learning how to determine perimeter and area measurements for our 7 garden beds
- Determining the potential volume of dirt needed to construct our two new garden beds
- Taking measurements of certain plants to chart plant growth (comparing the growth between beds to infer plant and soil health).
- Measuring the distance necessary to put in between seeds in planting to maximize growth
- Pumpkin Math! (height, width, circumference & weight)
- Tie in work with money to preparing crops for sale at local farmers' market. Research pricing of items & calculating total sale.

Cultivating Connections in Science

- Lessons on parts of a tree, plant, flower and fruit
- Lessons on parts of a seed, seed growth and seed identification
- Lessons on parts of a leaf, leaf shape and leaf identification
- Lessons on the composition of soil and how it is used by plants for support, structure and nutrients
- Lessons regarding watershed with ties back to geography & topography
- Conducted different experiments with compost to discover the process of decomposition and how compost helps in the garden

Soil Scientists

- Experiments to test for soil pH using vinegar & baking soda
- Experiments to learn the impact of soil additives on plant growth and in particular the influence of grey water (ties back to watershed, geography & topography)
- Lessons to learn the benefits of nitrogen, potassium and potash in plant growth
- Experiments to test the levels of nitrogen, potassium & potash present in the soil of our different beds
- Researched how to amend the soil in each bed depending on its need, made the amendments and followed with return tests of our soil to determine if efforts were effective

Cultivating Connections in Language

- Junior Great Books discoveries: Seasons – poetry, Catalog Cats/Our Garden, Carlos & The Cornfield, The Wedding Basket, The Scarebird, The Magic Listening Cap
- Frequent journal writing passages to document our work in the garden
- Creative story assignment envisioning how the first pre-historic farm came into existence
- Writing experiences provided through documentation of different research opportunities

Cultivating Connections in Art

- Sketches of root discoveries
- Sketched documentation of a plant's life cycle
- Parts of a tree, plant, flower, fruit and leaf booklets
- Painted garden rocks, garden markers & compost bins.
- Watercolor leaf piece
- Watercolor flower piece
- Origami flower piece
- Sun prints & evaporation art
- Making paper with seeds added

Cultivating Connections in Engineering

- Designing the new garden beds
- Creating adaptations to our current bean trellis structure
- Creating a system for maximizing care of our seeds once planted no matter the weather
- Designed, fabricated and installed a structure for a bean house

Cultivating Connections in History & Geography

- **Learning the process of bringing harvested crops to market**

- Lessons in farming and crop cultivation practices in Ancient Egypt, Ancient Greece, the Middle Ages and during the Renaissance
- Lessons on parts of a river, flood plains and benefits to farmland
- Lessons on parts of a volcano and benefits of volcanic activity to farmland
- Extension lessons involving different biomes (re: rainforest, temperate forest, mountain, tundra/arctic, desert, plains and wetlands) and how the environment relates back to farming and a need for ecological conservation.

Cultivating Culinary Connections

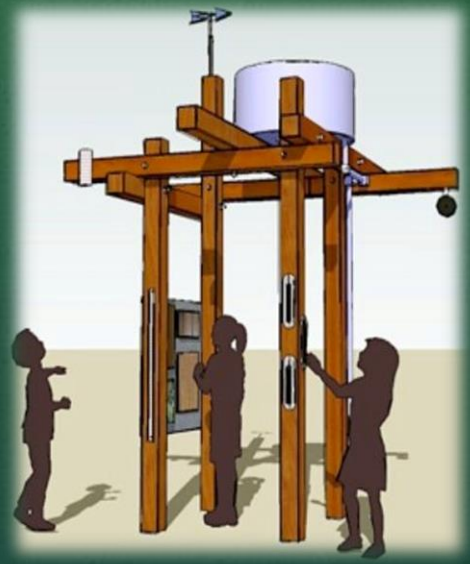
- Researching recipes depending on the harvest yield
- Got to prepare crops harvested straight from the garden for use in recipes
- This has become a great opportunity for students to try new foods




Cultivating Conscious Connections

What's Next

- We completed spring planting & will be working with families to care for remaining plants over the summer
- We have arranged a field trip to start next year with a local organic farmer and to the Hammond Farmer's Market.
- The children were able to create their own individual worm bins in the spring; studying worms from our existing compost pile & then returned the worms once the assignment was complete.
- We plan to transplant our trees at a state park in our area the beginning of next school year
- Looking for funds to purchase additional garden tools (trowels, rakes, seed starters)
- Looking for funds to construct a weather station to be located in the garden



Earth Day projects

Worm Study

Worm Bin Observation Recording

Gave lesson on plant life cycle to pK/K students at OMS

Gave pK/K children a glimpse of the progress of pine tree growth

One of many decomp comparison experiments